REMARKS

Applicant has cancelled the original claim set and added new claims that conform to standard U.S. practice. In addition, applicant has filed a replacement specification which addresses various usage issues associated with the translation from the original German language application. No new matter has been introduced via the replacement specification.

The application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,

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DISCONNECTING DEVICE FOR COMMUNICATIONS CONNECTIONS

FIELD OF THE INVENTION

[0001]   The invention relates to a switching arrangement for disconnecting a communications line between a computer and a remote data source.

BACKGROUND OF INVENTION

[0001][0002] If the user of a PC wants to access the intranet, he needs a modem in his Pepersonal computer (PC). The modem allows the connection of the PC to a telephone or ISDN line, which constitutes the communications connection with a remote communications computer.

[0002][0003] Definite connections should always exist or should be activated as needed. So that electrical current is not used unnecessarily in spite of these requirements, a sleep mode is provided for modern PCs, into which the PC is practically completely shut off, except for a few groups of devicesfew device groups. However, there is the option of turning the PC can be remotely turned on again from a distance by means of a wake-up signal.

[0003][0004] This output characteristic is always present in the PC and in the end results in means that the PC, which from the view standpoint of the user is turned off, can actually always be turned on by remote controlremotely switched on, unless the user operates a mechanical network switch.

[0004][0005] Moreover, modernModern Pes PCs as a rule no longer have the classic switches arrangement of a switch connected with the electrical current power supply for disconnecting the device completely from the current supply. Instead, the power units of the PCs are continuously connected with the current power supply. Theyand are activated and deactivated by means of semiconductor switches. The energy required for this the activation and deactivation is also taken from the current power supply. Because of thisAs a result, it becomes possible, as mentioned above, to switch the PC on or off, by remote control, in thatfor example, the electronic switch for the operational status of the power unit is can be controlled by means of the modem, for example. The modem itself receives its power via a different path, so that it is continuously switched on independently of the PC.

[0005][0006] It is also possible to attack theA PC can also be attacked via the telecommunications lines, and this preferably in those cases where. Such attacks often occur when it can be assumed that the user cannot monitor his devicePC.

OBJECTS AND BRIEF SUMMARY OF THE INVENTION

[0006][0007] On the basis of this it is theIn view of the foregoing, an object of the invention is to create a switching arrangement which is capable of interrupting the

communications connection to the computer, so that remote-~~controlled~~ switching-on <u>of the computer</u> is no longer possible.

~~[0007]In accordance with the invention, this object is attained by means of the switching arrangement having the characteristics of claim 1.~~

[0008]   ~~The~~ <u>A</u> switching arrangement in accordance with the invention has an at least single-pole PC connector as well as an at least single-pole remote connector, so that ~~it~~ <u>the switching arrangement</u> can be switched into a data link between the PC and a remotely located data source with the aid of these two connectors. A ~~switching~~ <u>disconnecting</u> device is located in the switching arrangement and has two switching states. In the first switching state, the data connection between the two connectors is ~~possible~~<u>established</u>, while the data connection is ~~interrupted~~ <u>disconnected</u> in the second state.

[0009]   A control connector of the ~~switching~~ <u>disconnecting</u> device is ~~used~~ <u>operable</u> to switch the ~~switching~~ <u>disconnecting</u> device ~~back and forth~~ between the two switching states. The control connector is ~~embodied for being connected~~<u>adapted to connect</u> with a supply voltage of the PC, which is actually shut off in the sleep mode of the PC and ~~only appears~~<u>is activated only</u> after <u>the PC is completely</u> ~~complete~~ switch<u>ed</u>-on.

[0010]   If the user employs such a switching arrangement and turns off his computer by means of the control knob for the power unit, the control voltage for the disconnecting device disappears. The ~~latter~~ <u>disconnecting device</u> then ~~makes a transition~~<u>transitions</u> into the switching state in which the data connection is ~~interrupted~~<u>disconnected</u>. <u>Remotely or externally originated</u> ~~Wake~~<u>wake</u>-up signals for the PC ~~coming from the outside~~ can no longer reach the PC and switch it on. If the user himself switches the PC on, an appropriate supply voltage is available, which is capable of switching the disconnecting device over into the first switching state. ~~The~~<u>At that, point the</u> PC is connected with the data line ~~from this time on~~.

[0011]   The switching arrangement in accordance with the invention can be implemented in the PC itself or can be contained in a separate housing ~~for being connected~~<u>connectable</u> with the PC by means of a plug connector.

[0012]   The at least one-pole PC connector usefully consists of a telecommunications connector of the same standard as ~~also exists~~<u>is used</u> in the PC. This can be an analog connector, as well as an ISDN connector.

[0013]   The same ~~correspondingly~~<u>also</u> applies for the outgoing<u>, remote</u> connector~~, the remote connector~~, which is also usefully provided with a plug connector such as originally provided in the PC.

[0014]   So that the data transmission takes place without problems in both direction<u>s</u>, and <u>so that</u> no ground connection problems can occur, the electrical switching arrangement

~~usefully~~ advantageously consists of at least one relay, which is appropriately designed with ~~many~~ multiple poles.

[0015]   In order ~~not to require~~ to eliminate the need for additional plug connectors on the PC, the control connector of the switching arrangement ~~in accordance with the~~ of the present invention is ~~usefully~~ advantageously equipped with two plug connectors, ~~so that these.~~ These two plug connectors can be switched into a connecting line with another peripheral device. Examples of such peripheral devices are the mouse, the keyboard, the printer and the like. A USB connector is also possible. It is sufficient if the ~~respective~~ corresponding connector additionally provides a supply voltage to the peripheral device and this supply voltage is also switched off in the sleep mode of the PC.

[0016]   ~~Things become~~ The connections are particularly simple if the housing has appropriate plug sockets, for example RJ-45 plug sockets, at both ends, and the plug connector is equipped as a double plug connector with a plug or socket for looping through a connection of a peripheral device.

~~[0017]Further developments of the invention are otherwise the subject of dependent claims. In this connection those combinations of characteristics are to be considered claimed to which no specific exemplary embodiment is directed.~~

~~[0018]An exemplary embodiment of the subject of the invention is represented in the drawings. Shown are in:~~

~~[0019]Fig. 1, a perspective representation of the device in accordance with the invention for disconnecting a communication line from a PC,~~

~~[0020]Fig. 2, the basic use of the device in accordance with the invention in a basic wiring diagram, and~~

~~[0021]Fig. 3, the electrical structure of the switching arrangement in a simplified basic wiring diagram.~~

BRIEF DESCRIPTION OF THE DRAWINGS

[0017]   Fig. 1 is a perspective view of a device for disconnecting a communications line from a PC in accordance with the present invention.

[0018]   Fig. 2 is a schematic diagram illustrating the use of the device of Fig. 1.

[0019]   Fig. 3 is a schematic wiring diagram illustrating the electrical structure of the device of Fig. 1.

DETAILED DESCRIPTION OF THE INVENTION

~~[0022]~~[0020]   A device 1 in accordance with the invention for disconnecting a data connection is ~~presented~~ illustrated in Fig. 1. ~~An~~ The device 1 includes an approximately cube-shaped housing 2 with two oppositely located ends 3 and 4 ~~is a part of the device 1~~. A

plug connector 5 is housed in each one of the two ends 3 and 4. Because of the perspective ~~representation,~~illustration only the plug connector 5a in the front end 3 can be seen in Fig. 1. The plug connector in the front end 4 is embodied in the same way. The two plug connectors are RJ-45 plug sockets ~~in~~ with an 8-pole design. Such plug sockets are also known as Western plug sockets.

[0023][0021] A control cable 7 extends from a substantially flat top 6 and leads to a further plug connector arrangement 8. On the side facing ~~the viewer~~outward in Fig. 1, the plug connector arrangement 8 is provided with a plug 9 which is complementary to the plug sockets provided on a PC for connecting a mouse, keyboard or the like. The opposite side of the housing of the plug connector arrangement 8 has a plug socket ~~on the opposite side~~, which is complementary to the plug 9 shown.

[0024][0022] ~~In accordance with~~As shown in Fig. 2, the device 1 ~~in accordance with~~of the present ~~the~~ invention is connected ~~with~~to a PC 11. The PC 11 has a plug socket 12, into which the plug 9 of the plug arrangement 8 is inserted. A plug 14 of a cable 15, which connects the plug 14 with a computer mouse 16, is inserted into the plug socket 13 ~~contained~~ arranged on the side of the plug arrangement 8 located opposite the plug 9.

[0025][0023] The PC 11 has a further RJ-45 plug socket 17, into which an RJ-45 plug 18 has been inserted. One of the two plug connectors 5 of the device 1 is connected with the PC 11 via a connecting cable 19 with a further RJ-45 plug 21 connected to the cable. A further RJ-45 plug 22 has been inserted into the other plug connector 5 and is connected to a line 23 leading away from the PC 11. The line 23 terminates, for example, at an S_0 bus of an ISDN line leading to a switching center.

[0026][0024] ~~A~~As shown in Fig. 3, a relay 24 with a total of 8 poles is located in the housing 2. Each switch set 25 of the relay 24 connects one pole 26 of the one RJ-45 plug connector 5a with the corresponding pole 26b of the other RJ-45 plug connector 5b.

[0027][0025] The circuit diagram in Fig. 3 is ~~schematized~~highly schematic. Only two switch sets 25 are shown~~, while~~ in Fig. 3 and the remaining connecting lines between the two connectors 5a, 5b are only partially shown.

[0028][0026] A relay winding 27 is part of the relay 24 and is connected via the control cable 7 ~~and,~~ (which contains two lines 28 and 29) ~~contained therein with~~to the two lines 31 and 32 and connects the two poles of the plug 9 with the corresponding poles of the plug socket 13. These are ~~those~~the poles through which the computer mouse 16 or a connected keyboard receives supply voltage from the PC 11.

[0029][0027] The functioning of the arrangement ~~in accordance with~~of the invention is as follows:

[0030][0028] ~~With~~When the PC 11 is switched off, the PC 11 does not provide a supply voltage to the computer mouse 16. As a ~~consequence~~result, the two connecting lines 31 and 32 are without voltage, so that the relay winding 27 is also not provided with ~~current~~voltage. The relay 24 is

in its rest state of rest. Since the switch sets 25 are working contacts that are normally open, they are in their open rest position of rest. In this position there is no galvanic electrical connection between any one of the poles 26a of the connector 5a and one of the poles 26b of the connector 5b. The data connection between the communications line 23 and the appropriate plug 17 at the PC 11 is galvanically electrically interrupted. Signals arriving via the communications line 23 cannot be forwarded to the PC 11. It is not possible to remotely switch the PC 11 out of its sleep mode into the fully switched-on state.

[0031][0029]   As soon as the user switches the PC 11 on, the latter PC 11 provides a supply voltage to the computer mouse 16. This voltage occurs is carried in the lines 31 and 32, with to which the relay winding 27 lies parallel. As a result of this, the relay 24 pulls engages and brings the contact sets 25 into the switched-on or engaged position. Now, each one of the poles 26a is connected with a corresponding pole 26b of the other plug connector 5b.

[0032][0030]   Because the computer mouse 16 is also connected to plug socket 13, it is supplied with current in the same way as is the case when the plug 14 is directly seated in engaged with the plug socket 12. Furthermore, all lines which otherwise connect the computer mouse 16 with the PC 11 are looped in an unchanged manner through the plug arrangement 8. Appropriate connecting lines 33 are provided.

[0033][0031]   The use of a relay sees to it ensures that no galvanic electrical connection at all is made between the plug socket 12 for the computer mouse 16 and the plug 17, to which the communications line 23 is normally directly connected. Because of the use of the inventive arrangement, in accordance with the invention nothing changes in the d.c. voltage relations in comparison with the direct connection of the computer mouse 15, or the communications line 23, with the PC 11 do not change.

[0034][0032]   The use of the relay 24 furthermore also has the advantage that the electrical connection between the two RJ-45 connectors 5a and 5b is independent of the direction or potential. The user is not forced to assure that the device in accordance with the of the present invention is only switched in a defined manner between the plug 17 and the communication line 23. The ohmic connection between the two connectors 5a and 5b allows the flow of current in both directions.

[0035][0033]   For one skilled in the art it also follows from the explained exemplary illustrated embodiment that it is possible to use semiconductor switches can be used in place of the relay 24, or Reed contacts the same as well as optical couplers. Depending on the requirements, the optical couplers can be switched bidirectionally or unidirectionally, and it is furthermore also possible to control the data connection between the two sockets free of potential potential-free by means of the supply voltage on the lines 31 and 32. Such modifications are also considered to be included part of the present invention. Since one skilled in the art knows in what manner he need show to appropriately modify the

circuit ~~appropriately~~, it is not necessary to cite a further exemplary embodiment for explanation.

~~[0036]~~[0034]   A switching arrangement is connected between a PC and a communications line. The switching arrangement is controlled by a supply voltage accessible <u>remotely or externally</u> from ~~the outside of~~ the PC. With the PC switched off, this supply voltage disappears and the device in the communications line switches into a blocking mode. In this way it is possible to <u>completely</u> disconnect the PC ~~completely~~ from the communications line without ~~acting on~~<u>intervention at</u> the PC, even if the communications card or the modem wants to maintain a constant connection with the outside world.

Claims:

1.   A switching arrangement (1) for disconnecting a communications line (23), by means of which a computer (11), in particular a PC, is connected with another data source,

        having an at least single-pole PC connector (5a), which is connected with the PC (11),

        having an at least single-pole remote connection (5b), which is connected with the data source (23),

        having an electrical switching device (24) located between the PC connector (5a) and the remote connector (5b), which has two switching states, wherein in the first switching state a data connection exists between the PC connector (5a) and the remote connector (5b), while in the second switching state the data connection is interrupted, and

        having a control connector (7) at the switching device (24), which is equipped for being connected with a supply voltage (31, 32) of the PC (11) and which is used to bring the switching device (24) into the first switching state if a supply voltage is present and, with the supply voltage lacking, to bring it into the second switching state.

2.   The switching arrangement in accordance with claim 1, characterized in that the at least single-pole PC connector (5a) is a telecommunications connector.

3.   The switching arrangement in accordance with claim 1, characterized in that the at least single-pole PC connector (5a) is an ISDN or analog connector for telecommunications lines (23).

4.   The switching arrangement in accordance with claim 1, characterized in that the at least single-pole remote connector (5b) is a telecommunications connector.

5.   The switching arrangement in accordance with claim 1, characterized in that the at least single-pole remote connector (5b) is an ISDN or analog connector.

6.   The switching arrangement in accordance with claim 1, characterized in that the electrical switching device (24) is constituted by an at least single-pole relay.

7.   The switching arrangement in accordance with claim 1, characterized in that the electrical switching device (24) is designed in such a way that it is in the second switching state when the supply voltage and/or a signal is lacking at the control connector (7).

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8.   The switching arrangement in accordance with claim 1, characterized in that the switching device (24) contains an electro-mechanical or electronic switching arrangement (25) for each pole of the data line (26).

9.   The switching arrangement in accordance with claim 1, characterized in that the control connector (7) is provided with a plug connector (9), which is designed to be plugged together with a plug connector (12), which is accessible from the outside of a PC (11).

10.   The switching arrangement in accordance with claim 9, characterized in that the plug connector (9) is galvanically connected with a further plug connector (13) in such a way that a lead to a peripheral device (16) of the PC (11) can be looped via the two plug connectors (9, 13).

11.   The switching arrangement in accordance with claim 10, characterized in that the one plug connector (9, 13) is designed as a plug connector for connecting a keyboard or a PS2 mouse (16) or a USB device.

12.   The switching arrangement in accordance with claim 1, characterized in that the switching arrangement is placed in a housing (2) which is provided with two identical connectors (5).

13.   The switching arrangement in accordance with claim 12, characterized in that the connectors (5) are RJ-45 connectors.

Abstract:

A switching arrangement is connected between a PC and a communications line. The switching arrangement is controlled by a power supply voltage accessible from the outside of the Pein the PC that can be accessed externally. With When the PC switched off, this supply voltage disappears and the device in the communications line switches goes into a blocking modeblocked state. In this way it isThis makes it possible to completely disconnect the PC completely from the communications line without acting onconducting any operations in the PC, even if the communications card or the modem wants to maintain a constant connection with the outside world.